VZ-200 TERMINAL

With the addition of a low cost V.21 modem this project will get your Dick Smith VZ-200 talking to the world! Designed and developed by the DSE Research and Development team at North Ryde, the ETI-695 must be the cheapest way to get a 300 baud glass terminal going yet.

THE VZ-200 was very good 'value for money' when it was released by Dick Smith Electronics a few years ago. The last batch sold was heavily discounted and no doubt many were snapped up by ETI readers, especially RTTY enthusiasts after the ETI-756 RTTY adaptor appeared in Nov/Dec '84. This project extends the VZ's capability to operate as a 300 baud serial terminal. Although the VZ-200 is no longer available the unit will also work with the latest VZ-300 computer which has an improved keyboard.

Construction

The pc board is designed to fit into a VZ expansion case which adds a professional finish to the project and is recommended. The case needs a bit of surgery to mount the DB-25S connector, so mark out the cut at the back of the 'top' half of the box (the larger piece). The connector sits flush with the lip of the half-case. Drill the two mounting holes for the DB-25S and screw it in with the 12 mm x 4BA screws and nuts.

Check over the pc board before commencing construction, look for broken tracks, bridges and undrilled holes. The prototype pc board has been tinned and had a couple of holes covered by the solder. These are best handled by heating the spot with a soldering iron and a bit of solder wick, if you try and force the component leads through such blocked holes you run the risk of lifting the copper away from the board and breaking bits off.

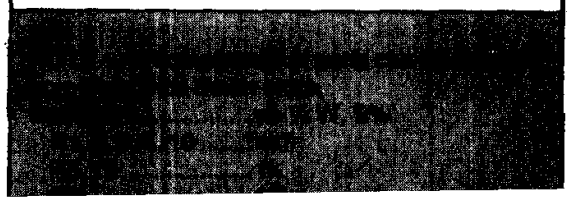
Start off by soldering in the ten wire links. One of them is near a mounting hole and should be bent around the hole to leave it uncovered, the other nine links should be straight and tight.

The 44-way edge connector can go in next. It mounts from the component side of the board (of course). The solder tails should be pushed through the board so that the bottom of the plastic part of the connector is flush with the copper side of the pc board. This is necessary to fit the finished pc board correctly into the case, so make sure the connector is aligned before soldering.

Some of the resistors mount on their ends. Be careful not to bend the leads too close to the resistor body to avoid breaking the leads off.

Solder in the capacitors before the diodes, since the two electrolytic caps are a

PARTS LIST — ETI-695



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Place the bottom half of the case down and push the 44-way connector through the slot in the end with the copper side of the pc board uppermost. Align the two pc board holes with the mounting pillars and fit the top half of the case. Finish with the case screws and the project is ready to test.

Testing

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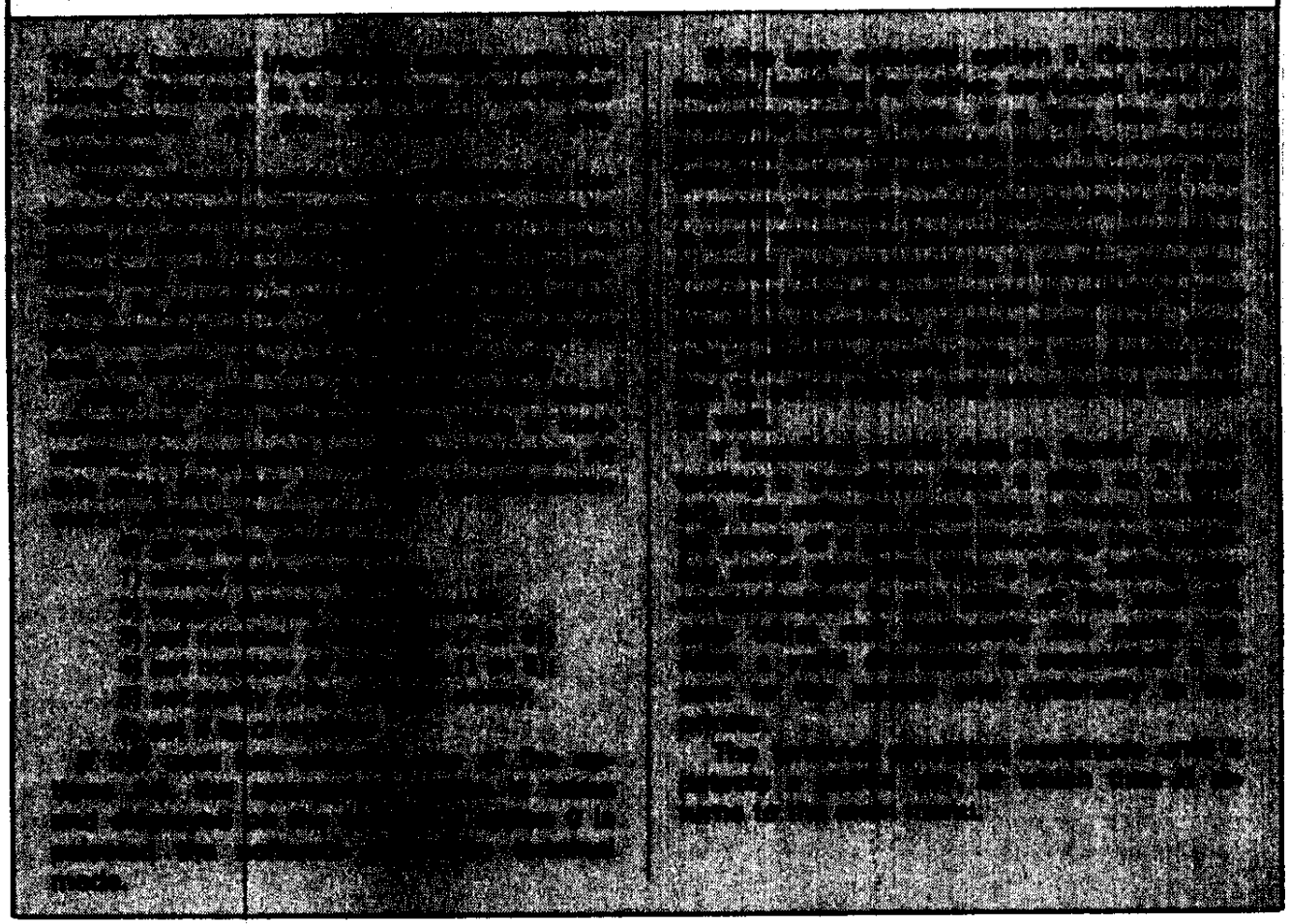
Testing is best done with a 300 baud terminal (or another computer emulating one) otherwise you will have to call a friend or bulletin board with a modem. To actually communicate you have to enter the terminal mode from the menu by typing 0.

Providing the character length, parity and stop bits are identical you should have no trouble using the ETI-695 as a simple terminal.

SOFTWARE OPERATION



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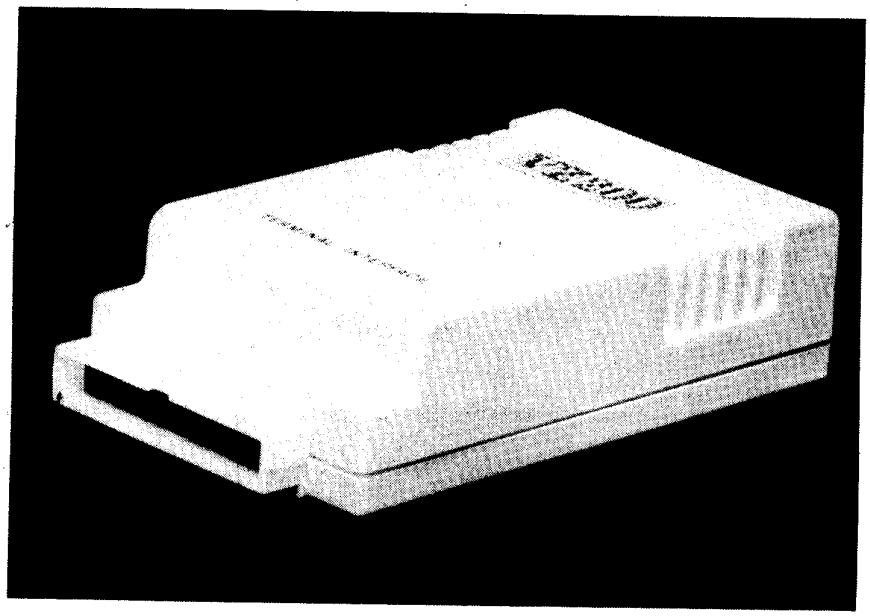
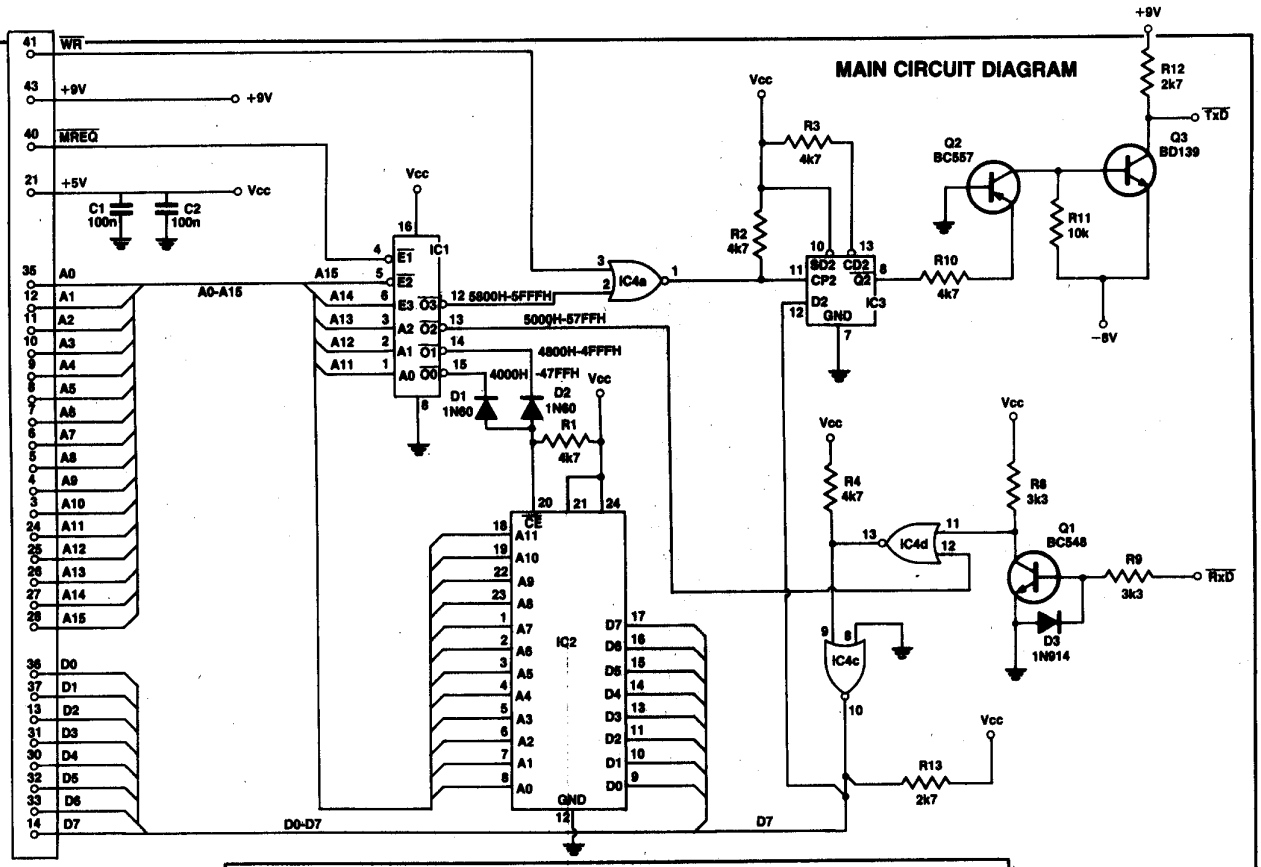
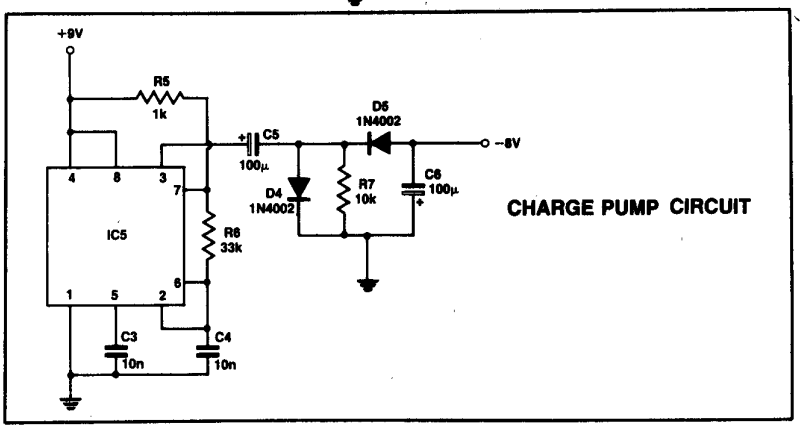


PARTS LIST — ETI-695

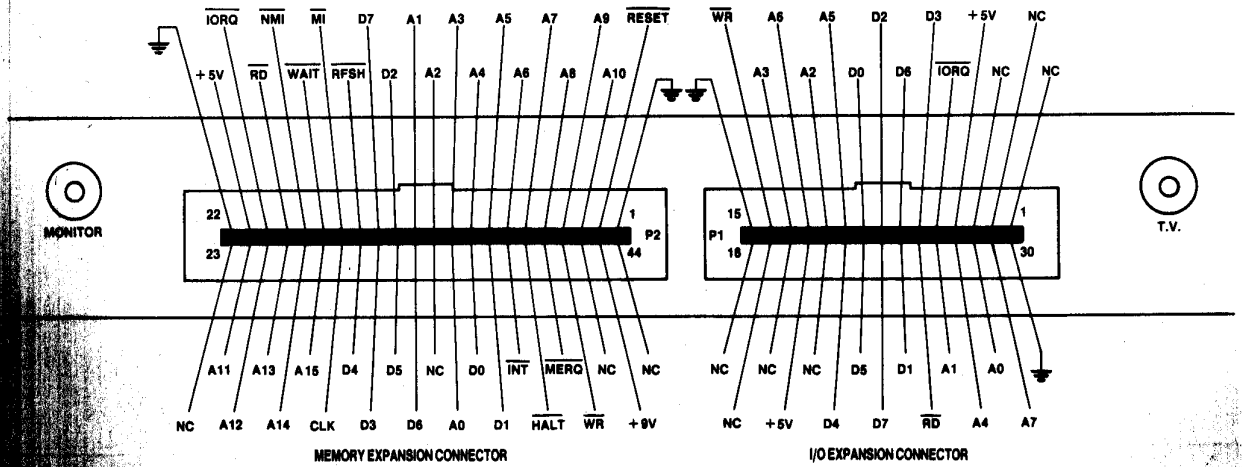
MAIN CIRCUIT DIAGRAM

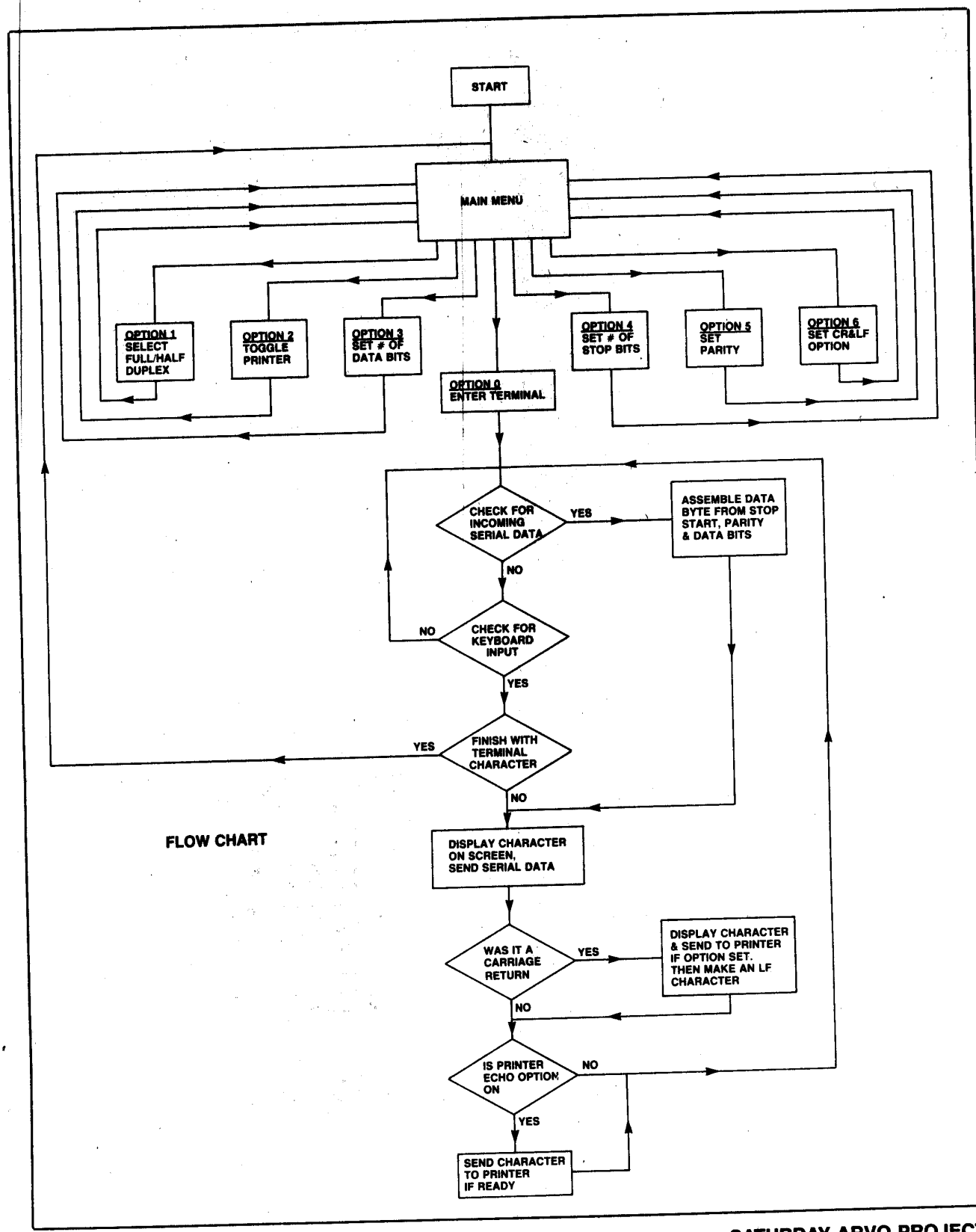


CHARGE PUMP CIRCUIT



VZ-200 REAR PANEL LAYOUT




START
MAIN MENU
OPTION 1 SELECT FULL/HALF DUPLEX
OPTION 2 TOGGLE PRINTER
OPTION 3 SET # OF DATA BITS
OPTION 0 ENTER TERMINAL
OPTION 4 SET # OF STOP BITS
OPTION 5 SET PARITY
OPTION 6 SET CR&LF OPTION
CHECK FOR INCOMING SERIAL DATA
YES
ASSEMBLE DATA BYTE FROM STOP START, PARITY & DATA BITS
NO
CHECK FOR KEYBOARD INPUT
NO
YES
FINISH WITH TERMINAL CHARACTER
YES
NO
DISPLAY CHARACTER ON SCREEN, SEND SERIAL DATA
WAS IT A CARRIAGE RETURN
YES
DISPLAY CHARACTER & SEND TO PRINTER IF OPTION SET. THEN MAKE AN LF CHARACTER
NO
IS PRINTER ECHO OPTION ON
NO
YES
SEND CHARACTER TO PRINTER IF READY

FLOW CHART

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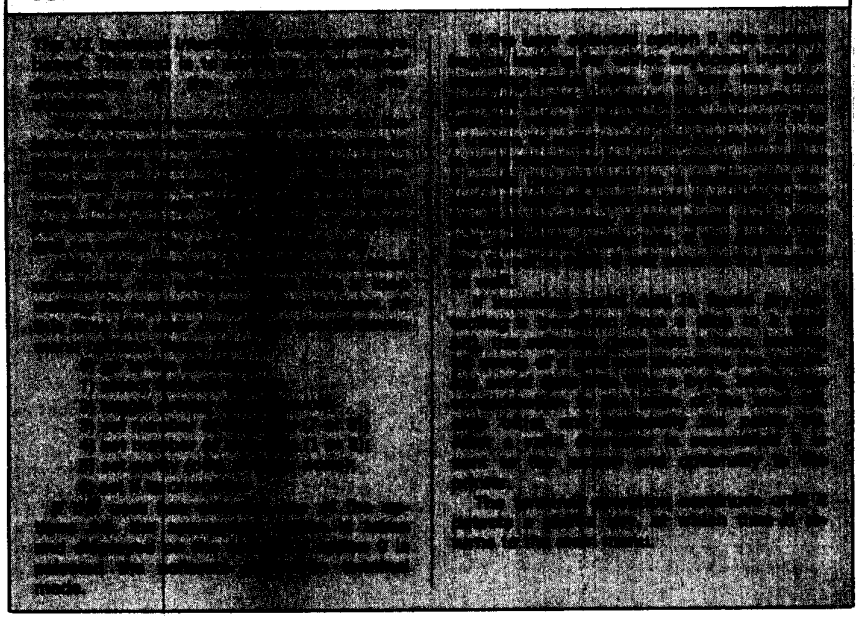
SOFTWARE OPERATION



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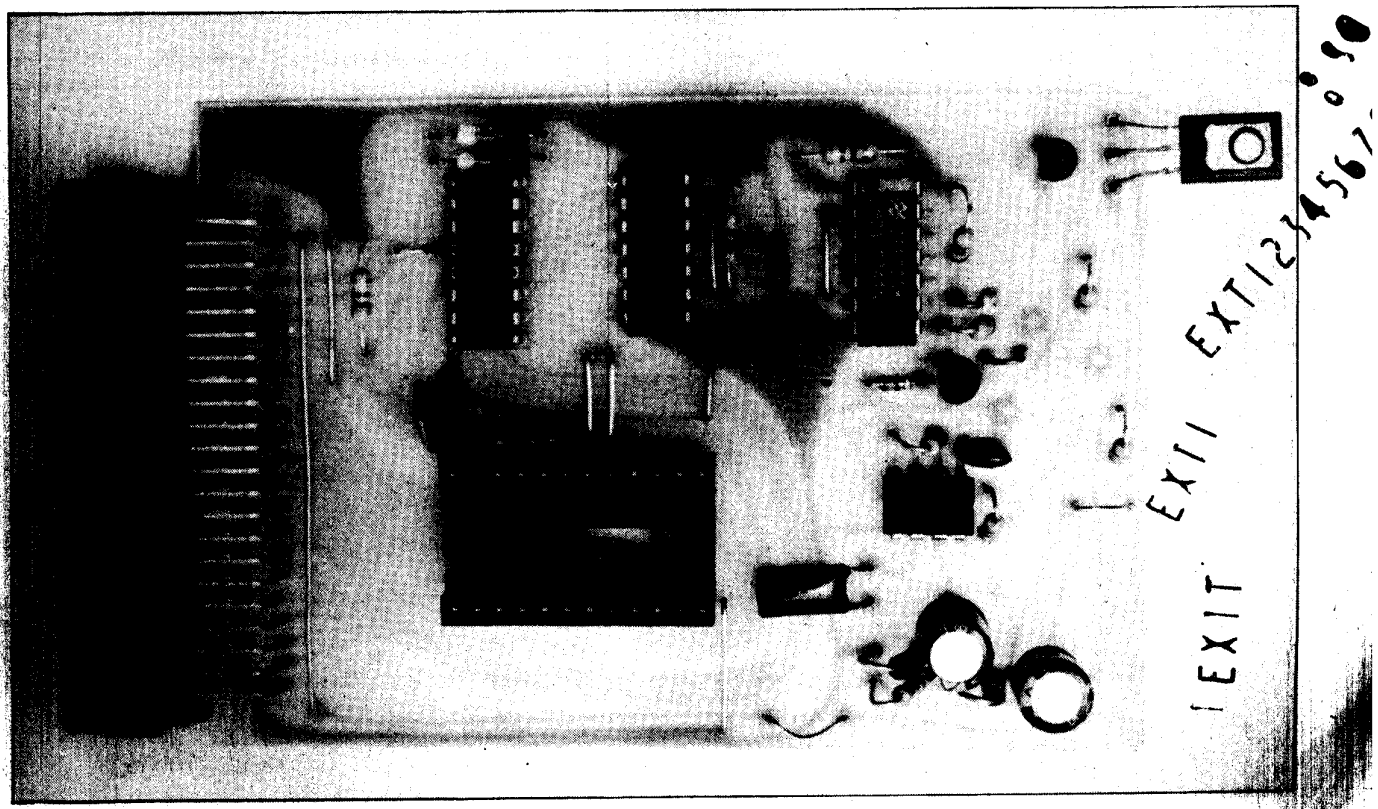

MACHINE CODE LISTING CONTINUED

ADDR	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0400:	00	18	04	FE	4F	18	F4	32	00	58	CD	23	43	3A	49	80
0410:	D6	30	47	AF	32	00	58	CD	23	43	10	F7	C9	3A	00	50
0420:	CB	7F	C9	F5	C5	CD	2E	43	CD	2E	43	C1	F1	C9	C5	3E
0430:	23	06	0B	10	FE	3D	20	F9	C1	C9	CD	2E	43	C5	3E	22
0440:	18	EF	F5	C5	01	FF	4F	CD	60	00	C1	F1	C9	7E	B7	C8
0450:	CD	6E	43	23	18	F7	21	00	70	22	E5	80	11	01	70	01
0460:	FF	01	36	60	ED	B0	AF	32	E4	80	32	00	68	C9	F5	E5
0470:	C5	D5	CD	7A	43	D1	C1	E1	F1	C9	ED	5B	E5	80	FE	0C
0480:	28	D4	FE	0D	28	7E	FE	08	28	35	FE	09	28	16	FE	0A
0490:	28	4A	FE	07	CA	50	34	CB	7F	20	08	FE	20	F8	CD	9D
04A0:	44	CB	F7	12	13	ED	53	E5	80	3A	E4	80	3C	32	E4	80
04B0:	FE	20	F8	CD	F3	43	3A	DF	80	B7	C8	CD	49	44	C9	3A
04C0:	E4	80	B7	28	0A	3D	32	E4	80	1B	ED	53	E5	80	C9	E5
04D0:	21	00	70	B7	ED	52	E1	C8	3E	1F	18	EA	3A	E4	80	4F
04E0:	06	00	C5	CD	F3	43	C1	EB	09	EB	ED	53	E5	80	79	32
04F0:	E4	80	C9	3A	E1	80	F5	3E	01	32	E1	80	CD	04	44	F1

ADDR	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0500:	32	E1	80	C9	E5	EB	3A	E4	80	5F	16	00	B7	ED	52	3A
0510:	E1	80	B7	28	04	11	20	00	19	EB	21	00	72	B7	ED	52
0520:	28	0A	ED	53	E5	80	AF	32	E4	80	E1	C9	21	20	70	11
0530:	00	70	01	E0	01	ED	B0	21	E0	71	11	E1	71	01	1F	00
0540:	36	60	ED	B0	11	E0	71	18	D9	CD	C4	05	CB	47	C0	CD
0550:	E2	3A	C9	CD	C4	05	CB	47	C0	79	C3	8D	05	FE	61	D8
0560:	FE	7B	D0	E6	5F	C9	21	FE	68	0E	08	06	06	7E	F6	04
0570:	1F	30	58	10	FB	CB	05	0D	20	F1	06	04	21	DF	68	7E
0580:	CB	57	28	3D	CB	05	7E	CB	57	28	3A	CB	05	CB	57	28
0590:	38	CB	05	CB	05	7E	CB	57	28	11	CB	05	7E	CB	57	28
05A0:	11	3E	FF	32	E2	80	AF	32	E3	80	C9	3A	E3	80	CB	D7
05B0:	18	05	3A	E3	80	CB	CF	32	E3	80	3E	FF	32	E2	80	AF
05C0:	C9	0E	03	18	06	0E	02	18	02	0E	01	21	05	45	1E	00
05D0:	3A	E3	80	CB	57	28	04	1E	60	18	06	CB	4F	28	02	1E
05E0:	30	3E	08	91	4F	3E	06	90	47	CD	FA	44	83	06	00	4F
05F0:	09	7E	21	E2	80	BE	28	C7	77	C9	AF	B9	28	05	C6	06

ADDR	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0600:	00	20	FB	00	C9	54	57	20	49	51	52	47	95	28	46	41
0610:	45	42	58	20	43	5A	56	35	32	20	33	31	34	42	2E	20
0620:	2C	20	4D	36	39	2D	3B	30	37	59	4F	0D	49	50	55	48
0630:	4C	1A	4B	38	4A	00	00	00	00	00	80	00	00	00	00	00
0640:	00	00	65	00	00	00	00	25	22	20	23	21	24	00	38	00
0650:	3C	00	5C	26	29	3D	2B	40	00	00	00	00	00	00	00	00
0660:	3F	2A	2F	2B	00	14	17	00	05	11	12	07	13	00	00	01
0670:	06	02	18	00	03	1A	16	00	00	00	00	00	00	0E	00	00
0680:	00	00	0D	00	00	00	00	00	08	19	0F	00	09	10	15	08
0690:	0C	00	0B	00	0A	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
06A0:	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
06B0:	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
06C0:	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
06D0:	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
06E0:	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
06F0:	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF

ADDR	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0700:	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0710:	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0720:	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0730:	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0740:	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0750:	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0760:	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
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07A0:	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
07B0:	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
07C0:	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
07D0:	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
07E0:	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
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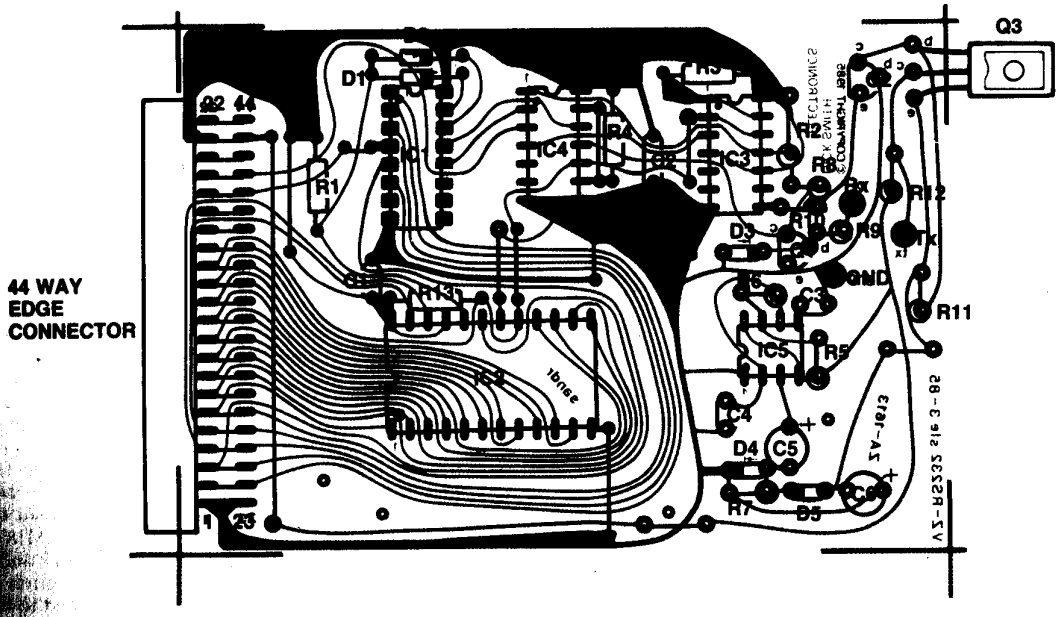
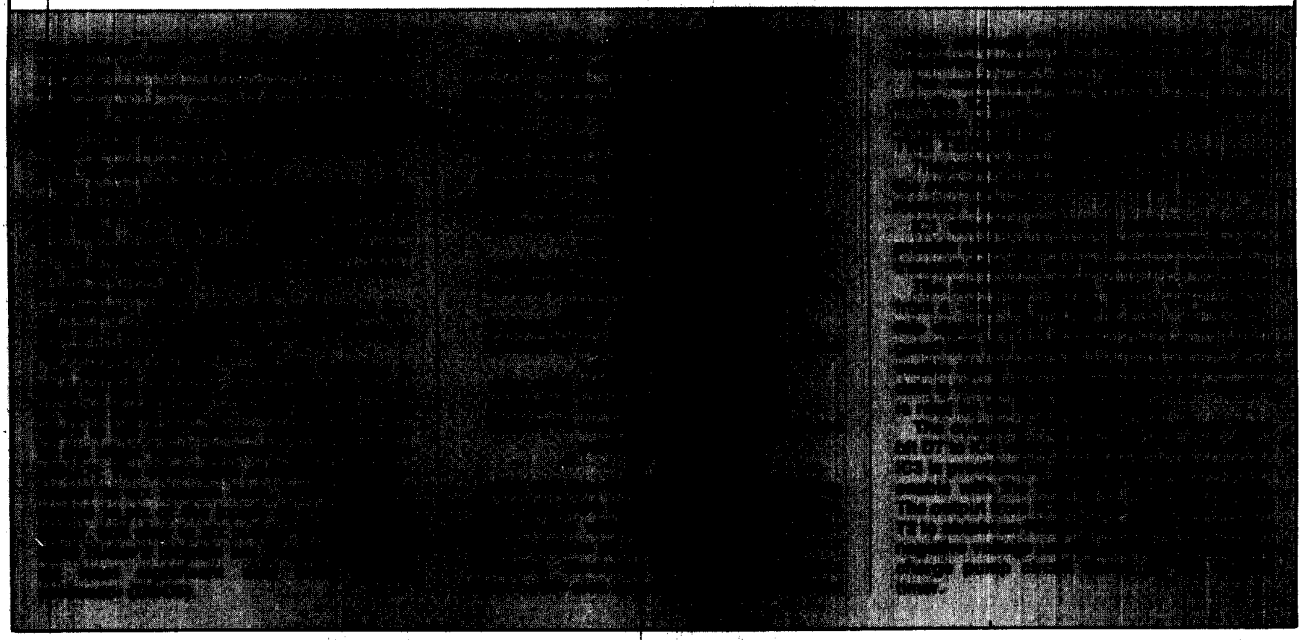
COMPONENT OVERLAY



HOW IT WORKS — ETI-695



SOURCE CODE

A complete documented source code listing of the software will be available on the Dick Smith Bulletin Board in the near future (according to Steven Engels of Dick Smith Electronics). The listing is too long to reproduce in the magazine. THE DSE-BBS is reached on: (02)887-2276 within Australia; +61 2 887-2276 on ISD.

The DSE-BBS is online 24 hours except on Fridays between 3 pm and 5.30 pm Eastern Standard Time.

TECHNICAL INQUIRIES

As the complete project including software was developed at DSE, all inquiries about the VZ-200 terminal project should be directed to Dick Smith Electronics.

HEXADECIMAL MACHINE CODE LISTING VZ-RS V1.5